

*Ad Cont.*

enough in some ways to interfere with each other, the proprietary nature of the former and the intended function of the latter does not permit combined functions to be realized. For example, while a wireless portion of a network may have a rudimentary capability to track and/or switch the access point for communication with a particular terminal, it cannot generally report the location of the assets that such terminals or particular operators which particular terminals may represent, much less track assets represented by equipment connected to a given terminal which may communicate with a central server or other terminals through a wireless portion of a network. Conversely, RFID systems cannot provide data communications using standard wireless data networking protocols, such as IEEE 802.11. Special purpose transmitter/receiver devices, known as interrogators, are equipped to merely sense the proximity of identifiable tags or to engage in limited read/write data traffic with the tags using protocols that preclude the inclusion of other network-aware devices participating in the communication.

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In current wireless networks, data associating access points with particular devices is generally stored only on the access points themselves. In accordance with the present invention, network queries to the access points are used to create a general data store 100 of access point/wireless device associations and metrics, such as the strength of radio signals between access points and the devices. The invention operates on this data by making it accessible to a client terminal 80 through a client interface 80'. This data is formatted and organized for display, preferably in accordance with specific client queries, by a geographic information system (GIS) resident on or

downloadable from the server to the client terminal. Such systems are generally known for geolocation and map-following applications and can be readily adapted for any particular environment such as a building, a plurality of business sites, a map of a region and the like.

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This type of tag provides a function identical to known RFID systems such as inventory control and access authorization but through an open and expandable wireless network. However, different types of articles may be distinguished by the return signals and a description thereof and/or other pertinent information retrieved from look-up table 100. Additional functionality can be achieved through the GIS arrangement for reporting location and may be enhanced by fine-grained location detection arrangements as may be desired.

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Page 15, line 14+:

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Additional functionality and potential applications are available from the arrangement illustrated in Figure 5. This arrangement is similar to that of Figure 4 but additionally includes condition sensing (e.g. 185) and/or remote device control from the network. It is contemplated that this type of arrangement should be integrated with the associated device 200, such as portable telephone 70 configured to operate over a wireless network, using, for example, the voice-over-IP protocol. Thus usage or any other detectable condition can be monitored directly and in substantially real-time. Transmission from modulator 180 can be initiated by interrogation signals from the network and/or upon change in any monitored condition. In the context of telephony, the bidirectional voice message can be recorded on the network or additional

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functions provided such as recording a message on the network for later transmission such as upon the occurrence of a busy signal or when it is desired to transmit a message at a particular time. The functionality of the arrangement of Figure 5 is also particularly useful in the context of a medical treatment environment since location reporting can be limited to assets which are not currently in use.

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In view of the foregoing, it is seen that the use of active or passive tags which are visible to a computer network having wireless links provides a substitute for RFID systems that overcomes the disadvantages of the closed nature of such systems and provide two primary functions of general data networking and physical location sensing using the same infrastructure. Further, the system in accordance with the invention provides numerous additional and valuable functionalities well beyond those provided by RFID systems. The invention may be easily implemented with well-understood and reliable hardware from a mature technology and at little cost if a network supporting wireless links is already in place or otherwise needed for its usual functions.

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Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is as follows:

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